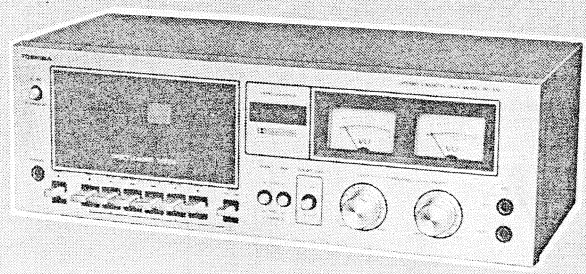
TOSHIBA

STEREO CASSETTE DECK

PC-X10

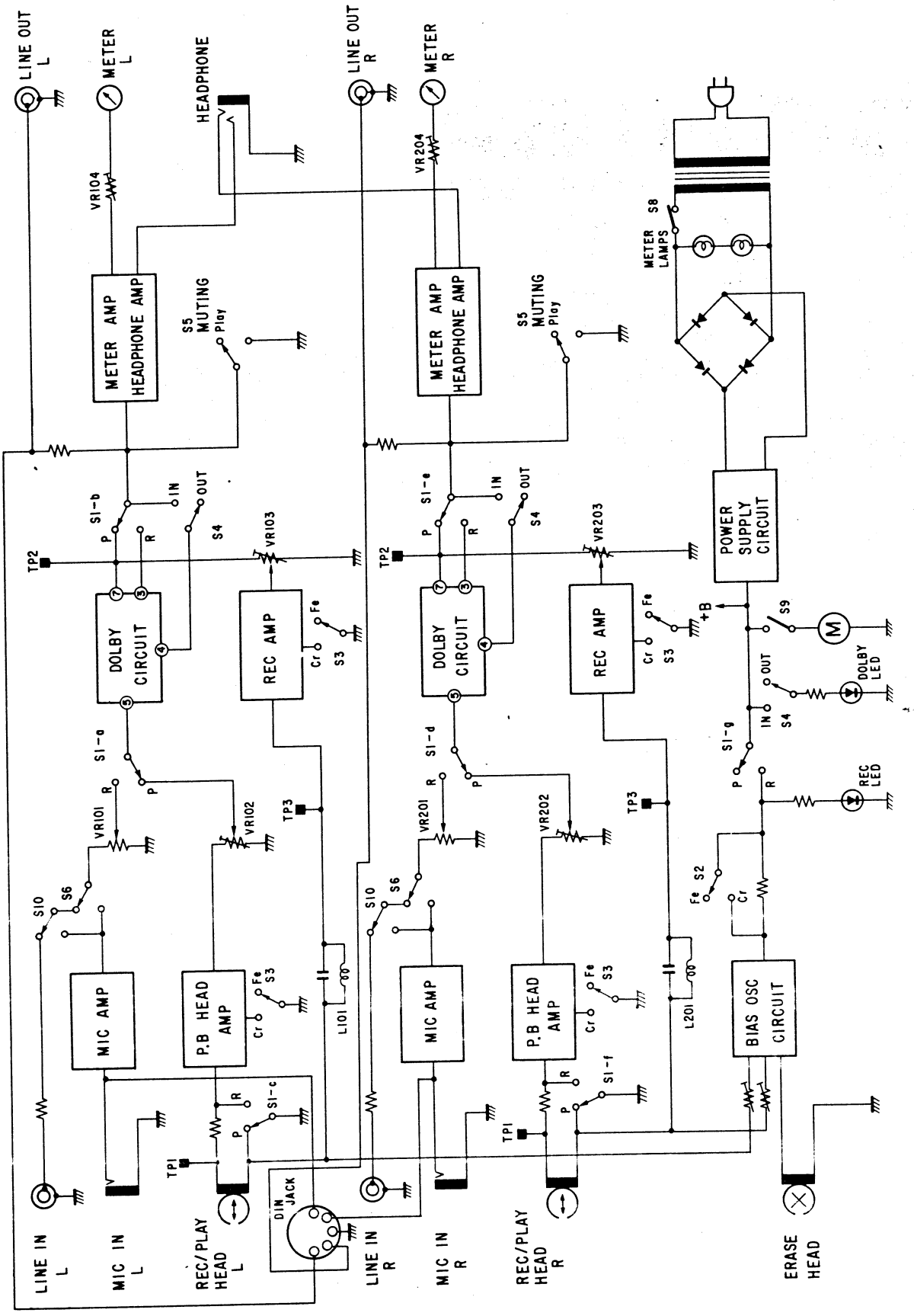


SPECIFICATIONS			
Power Supply:	240V AC, 50 Hz (for U.K. and Australia) 220 V AC, 50 Hz (for European countries except U.K.)	SN Ratio:	57 dB (line peak level WTD, Chrome position tape) Dolby NR mode improves SN ratio by 5 dB and 10 dB at 1 kHz and 5 kHz or over respectively.
Power Consumption:	7W		
Motor:	DC servomotor	Input Jacks:	Line input jack – Cord with pin jack, 100 mV (50K ohm or more) Microphone jack – 6.3mm dia. jack x 2, 0.25 mV (600 ohm ~ 10K ohm)
Head:	2-head system, record/ Playback head (permalloy), erase head (ferrite)		
Semiconductors:	ICs ..... 2 Transistors ..... 14 Diodes 9	Output Jacks:	Line output jack – Cord with pin jack, 0.4V (50K ohm) Headphone jack, 0.25mW (8 ohm)
Track:	4-track and 2-channel stereo		
Record/erase System:	AC Bias (85 kHz)/AC Erasure		
Tape Speed:	4.8 cm/sec	Dimensions (mm):	420(W) x 145(H) x 210(D) (including rubber feet and knobs)
Fast Forward/rewind:	Approx. 80 sec. (C-60)		
Wow and Flutter:	0.055% (WTDRMS)	Weight:	3.8 kg
Frequency Response:	25 Hz ~ 16 kHz (Chrome position tape)		

Specifications are subject to change without notice.

TE, TI, AY

1. BLOCK DIAGRAM



*Noise Reduction System is manufactured under license from Dolby Laboratories Inc. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Inc.

Figure 1.

2. PARTS LOCATIONS

FRONT VIEW

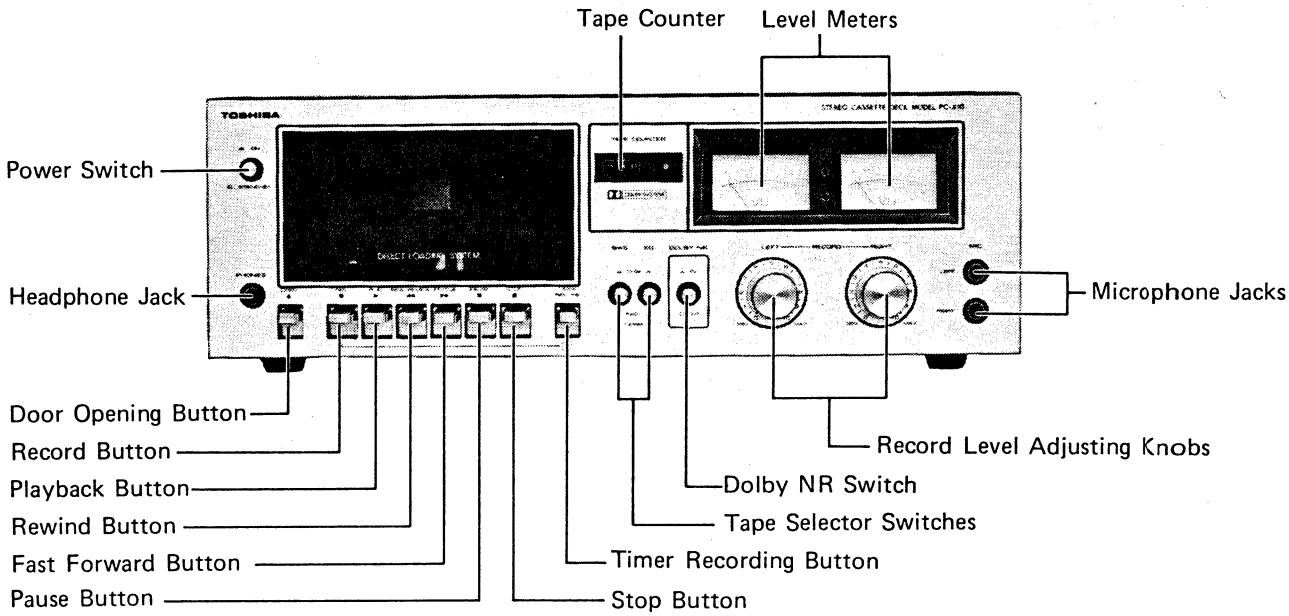


Figure 2.

REAR VIEW

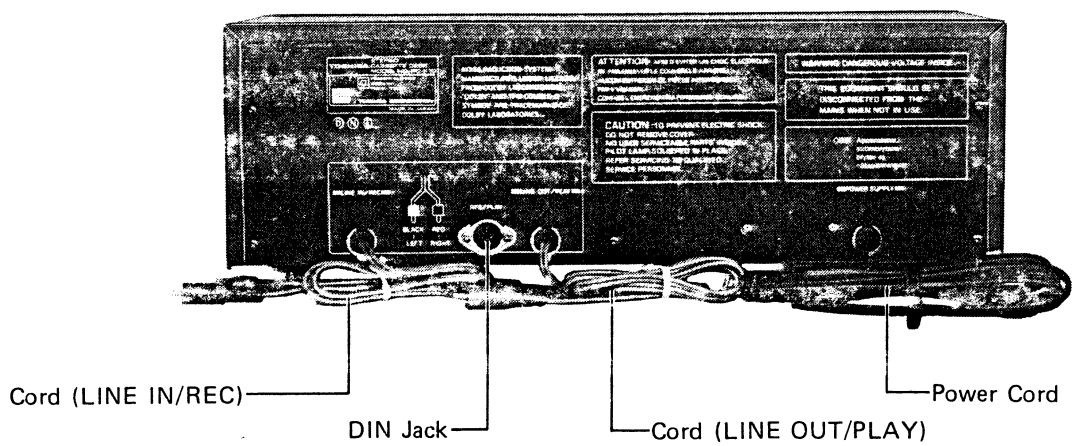


Figure 3.

3. DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Detach the top cover removing 4 screws ①.

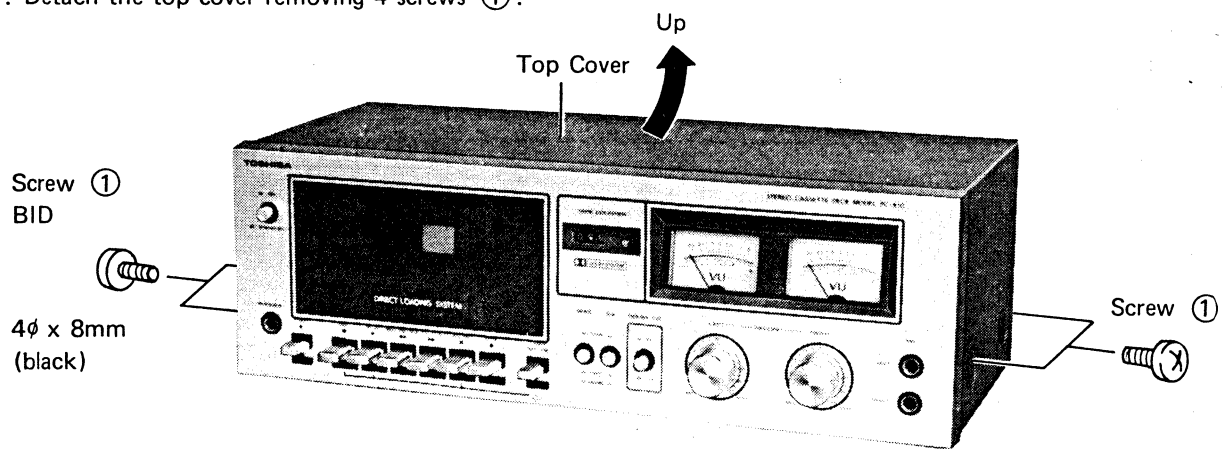


Figure 4.

FRONT PANEL REMOVAL

1. Detach the top cover.
2. Remove 2 recording level adjusting knobs ②.
3. Remove 2 screws securing front panel from both sides.
4. Remove 3 screws ④ at the bottom.
5. Open the door to remove screws ⑤ and ⑥ securing the front panel.
6. Remove two screws ⑦ securing power switch.
7. Remove one screw ⑧ securing the motor mounting board.
8. Remove two screws ⑨ securing the motor mounting board.
9. Remove one screw ⑩ securing PC board.
10. Detach the front panel by removing the door from the front panel.

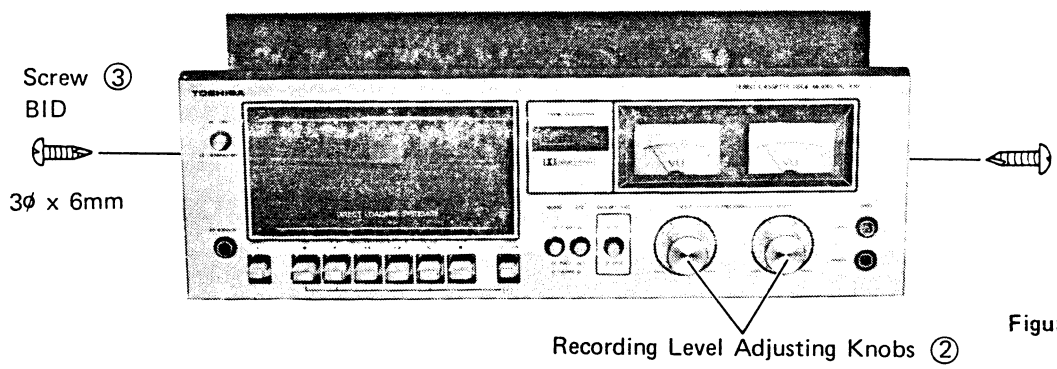


Figure 5.

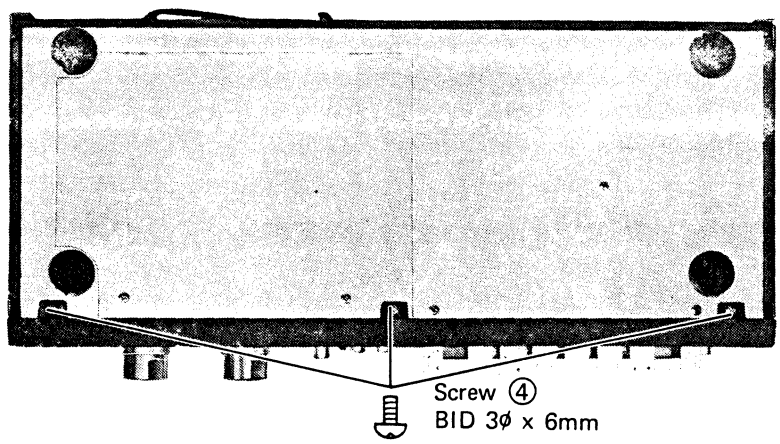


Figure 6.

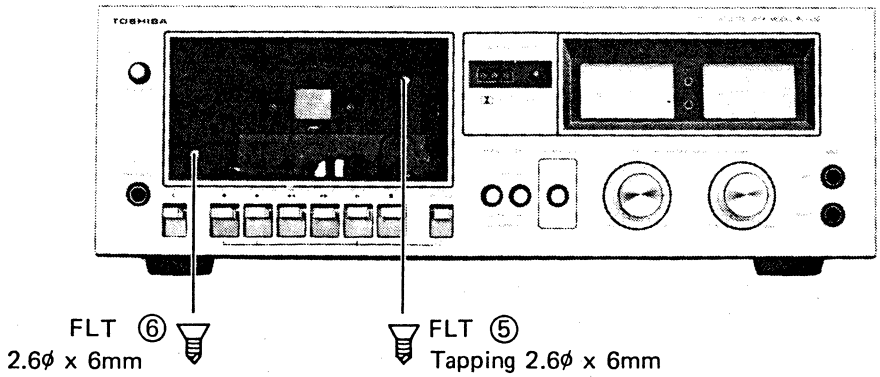


Figure 7.

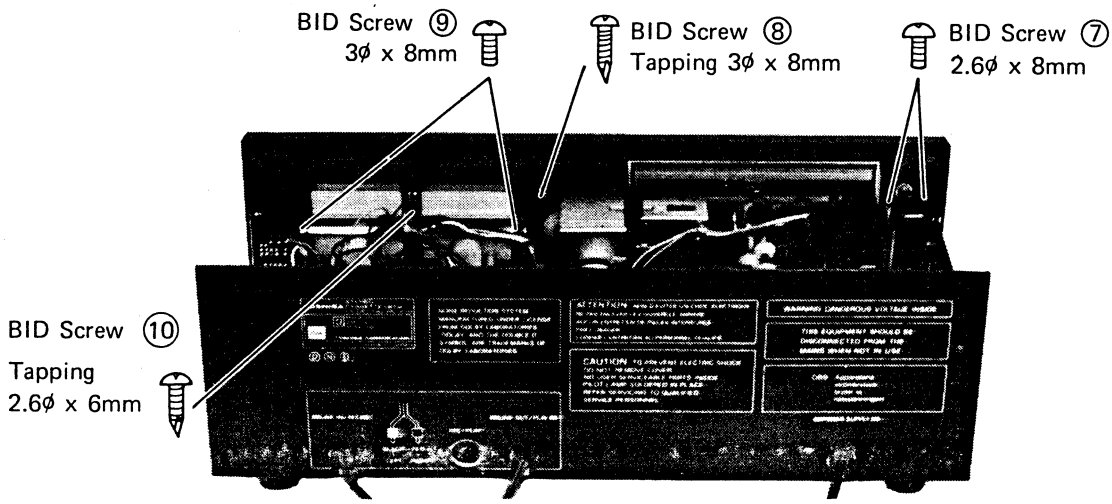


Figure 8.

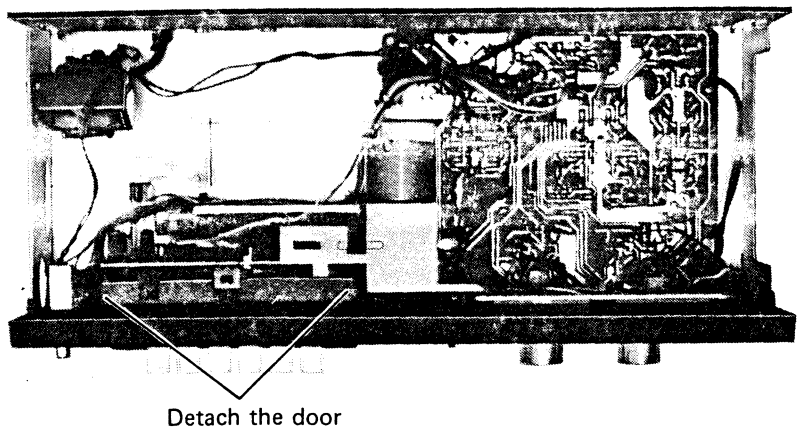


Figure 9.

4. ADJUSTMENTS

TEST EQUIPMENTS

1. Vacuum Voltmeter (VTVM)
2. Signal Generator (SG)
3. Resistance Attenuator (ATT)
4. Screwdriver
5. Test Tapes
   - MTT-114
   - MTT-111 (3 kHz)
   - MTT-150 (400 Hz)
   - AC-511 (Chome)
   - Blank Tape

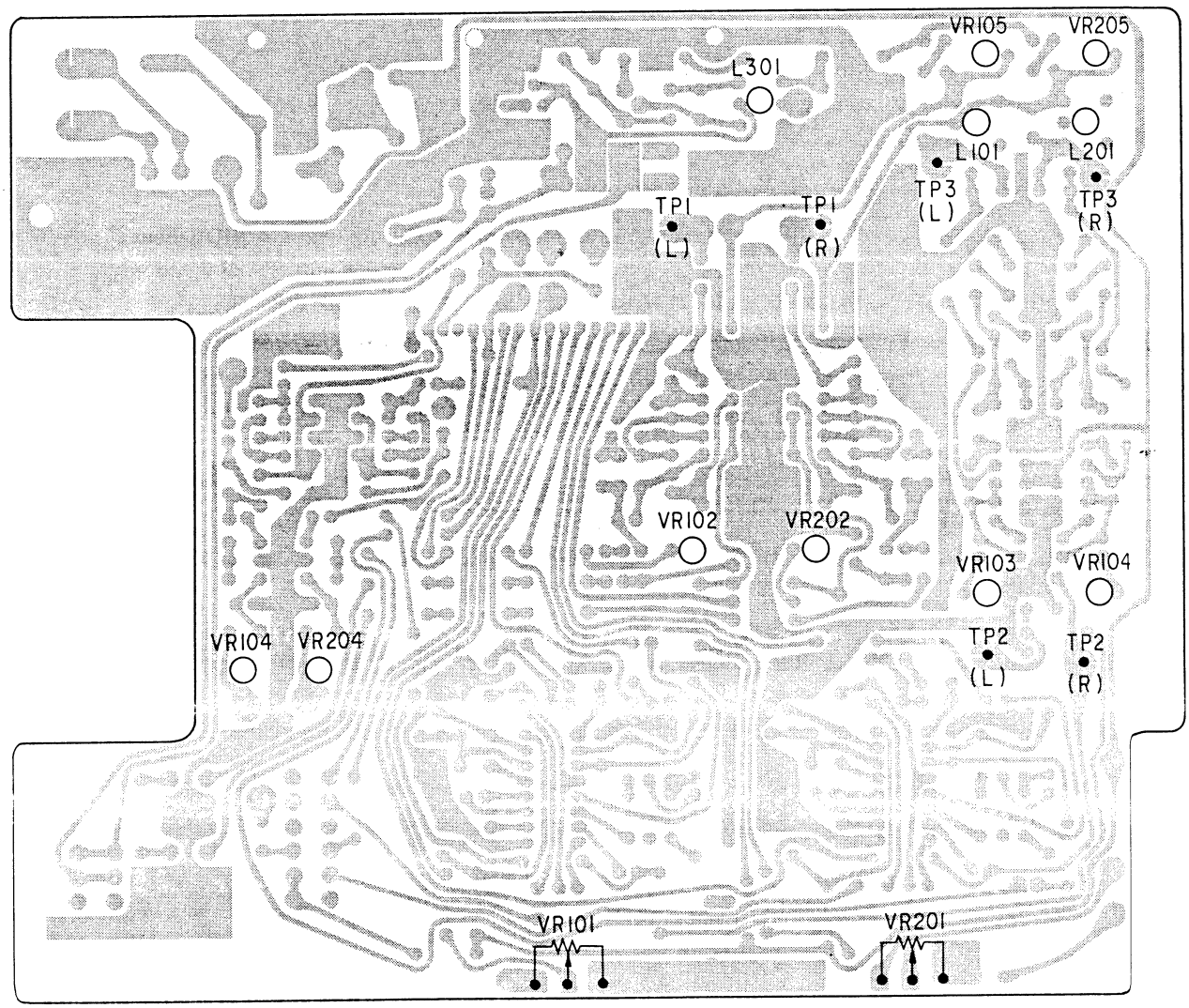


Figure 10.

	Item	Reference Value	Tape Used	Adjusting Tool	Volume	Switch			Adjustment Point	Test Point	Input Frequency ATT	Remarks
						Bias	EQ	NR				
1	Head azimuth adjustment	Max.	MTT-114	VTVM screwdriver	———	Nor	Nor	Out	Head azimuth adjusting screw	Line out	———	Fasten screw after adjustment. See Fig. 11.
2	Tape speed measurement	3000 ± 30 Hz	MTT-111	Frequency Counter Screwdriver	———	Nor	Nor	Out	Semi-fixed VR in motor	Line out	———	Adjust to 3000 ± 15 Hz only when tape speed deviates from reference value at the tape end. (See Fig. 12)
3	Playback sensitivity adjustment	580 ± 10mV	MTT-150	VTVM screwdriver	———	Nor.	Nor	Out	VR102 VR202	T.P. 2	———	
4	Meter adjustment	Meter +3 dB indication Difference between Rch and Lch within 0.5 dB	MTT-150	Screwdriver	———	Nor	Nor	Out	VR104 VR204	Meter scale	———	No difference between deflections of right and left meters.
5	Bias frequency adjustment	85K ± 5 kHz	AC-511	Frequency Counter Screwdriver	Min.	CrO_2	CrO_2	Out	L301	T.P. 1	———	
6	Bias leak adjustment	Min.	———	VTVM screwdriver	Min.	Nor	Nor	Out	L101 L201	T.P. 3	———	
7	Record/playback frequency special adjustment (crome)	0 ± 1 dB	AC-511	SG, ATT, VTVM Screwdriver	Max.	CrO_2	CrO_2	Out	VR105 VR205	Line out	1 kHz, 12.5 kHz –40 dB	
8	Distortion ratio measurement	400mV ± 60mV	AC-511	SG, ATT, VTVM Screwdriver	Max.	CrO_2	CrO_2	Out	VR103 VR203	Line out	400 Hz –20 dB	

- Input: 0 dB = 1V
- Line in input impedance: 600 ohm
- Line out loading impedance: 50K ohm
- Test point loading impedance: Unloading

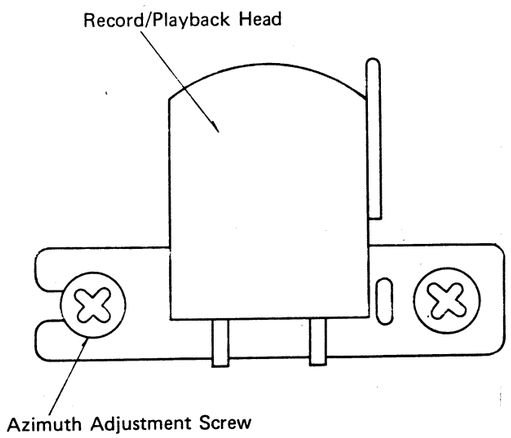


Figure 11.

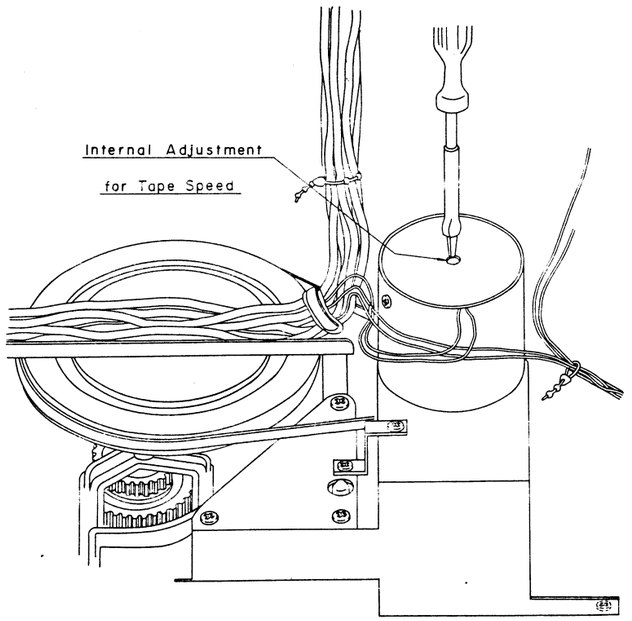
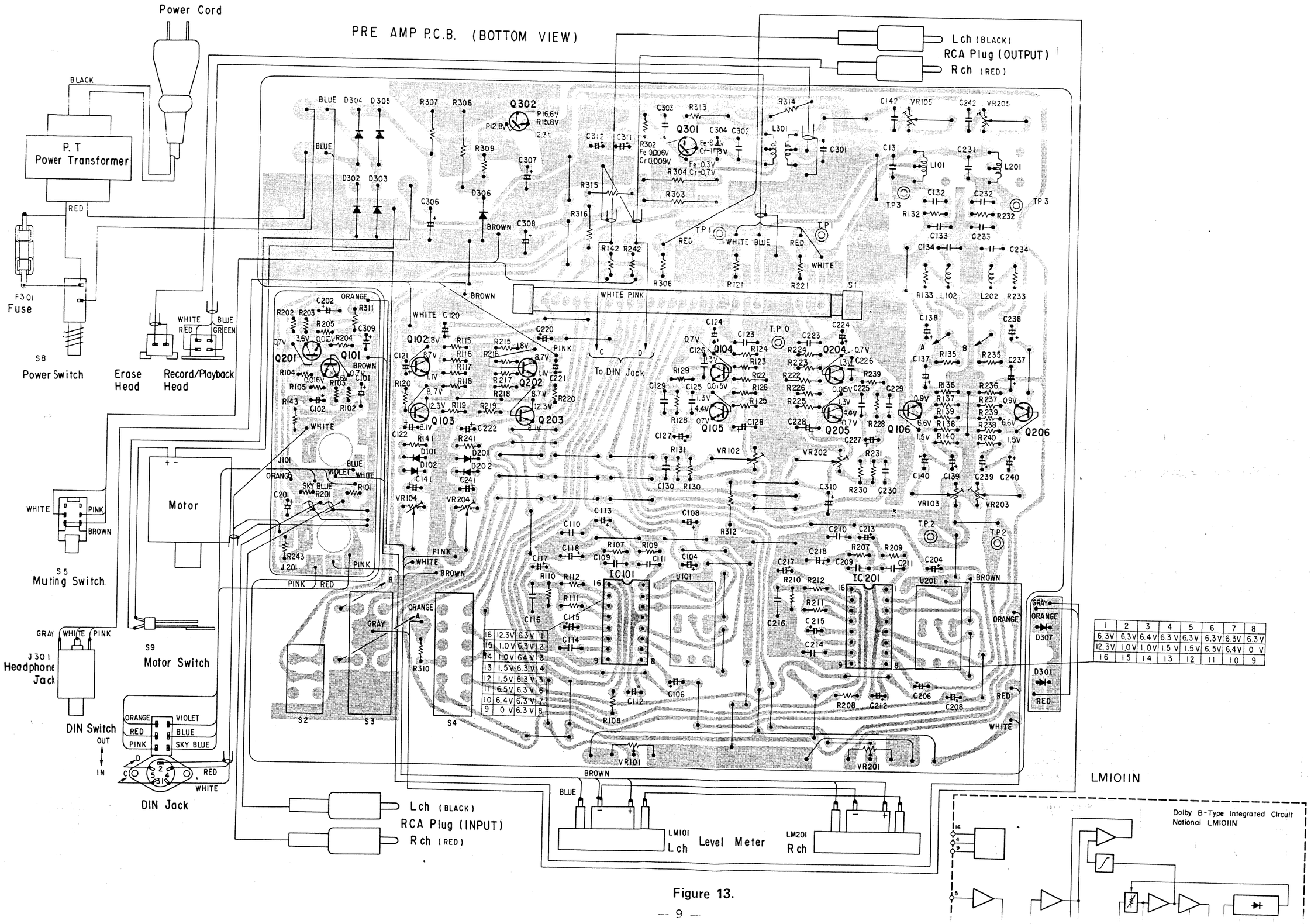


Figure 12.

5. ELECTRICAL PARTS LOCATIONS



6.3V	6.3V	6.4V	6.3V	6.3V	6.3V	6.3V	6.3V
12.3V	1.0V	1.0V	1.5V	1.5V	6.5V	6.4V	0V
16	15	14	13	12	11	10	9

6	12.3V	6.3V	1
5	1.0V	6.3V	2
4	1.0V	6.4V	3
13	1.5V	6.3V	4
12	1.5V	6.3V	5
11	6.5V	6.3V	6
10	6.4V	6.3V	7
9	0V	6.3V	8

Figure 13.

6. SCHEMATIC DIAGRAM

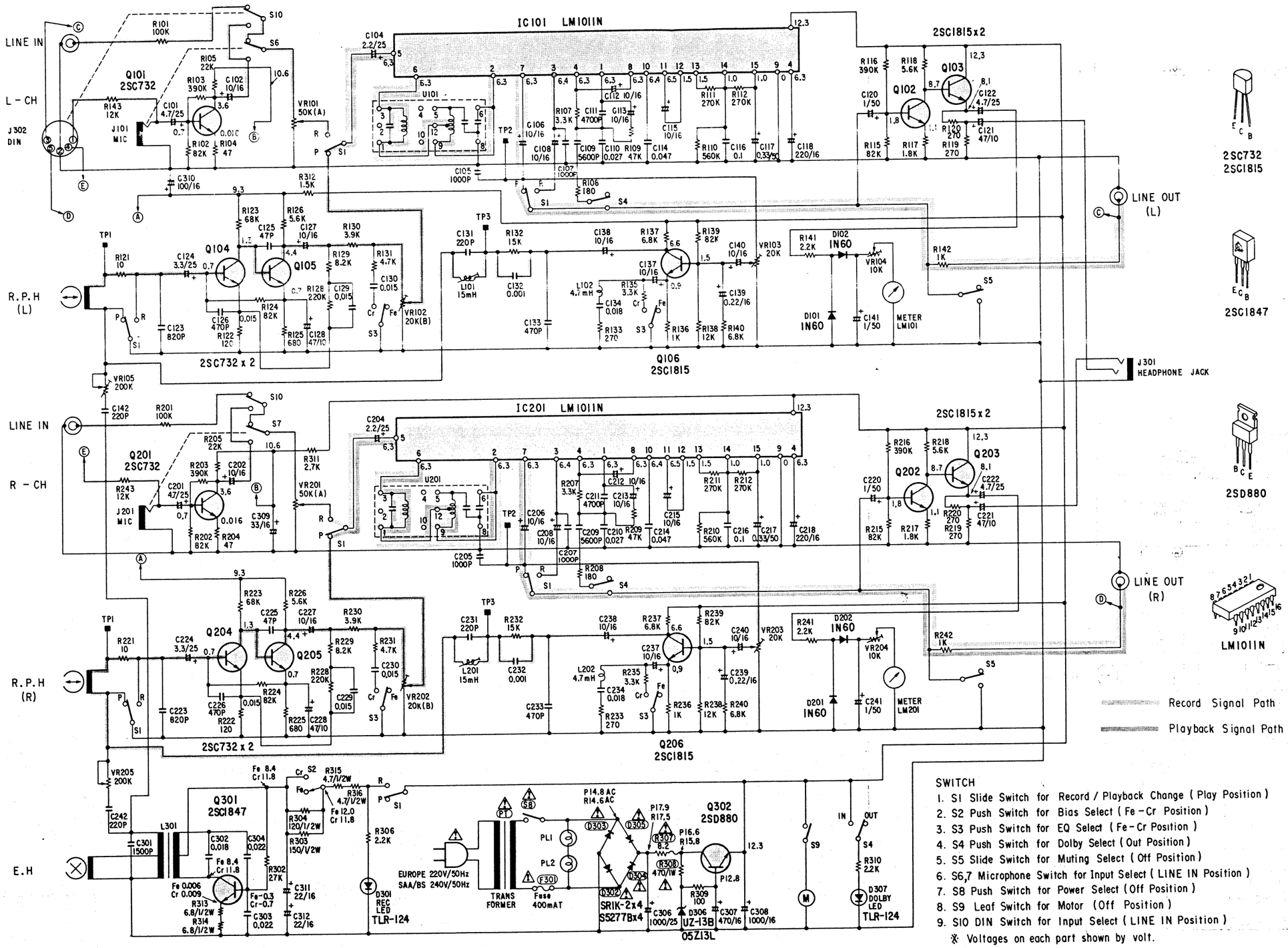

IC101 LM1011N
IC201 LM1011N
2SC1815x2
LINE IN
L - CH
R - CH
R.P.H (L)
R.P.H (R)
E.H
LINE OUT (L)
LINE OUT (R)
J301 HEADPHONE JACK
2SC732 x 2
Q106 2SC1815
Q206 2SC1815
Q301 2SC1847
Q302 2SD880
2SC732
2SC1815
2SC1847
2SD880
LM1011N
Record Signal Path
Playback Signal Path
SWITCH
1. S1 Slide Switch for Record / Playback Change (Play Position)
2. S2 Push Switch for Bias Select (Fe – Cr Position)
3. S3 Push Switch for EQ Select (Fe – Cr Position)
4. S4 Push Switch for Dolby Select (Out Position)
5. S5 Slide Switch for Muting Select (Off Position)
6. S6,7 Microphone Switch for Input Select (LINE IN Position)
7. S8 Push Switch for Power Select (Off Position)
8. S9 Leaf Switch for Motor (Off Position)
9. S10 DIN Switch for Input Select (LINE IN Position)
※ Voltages on each part shown by volt.

Figure 14.

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

7. MECHANICAL PARTS LOCATIONS

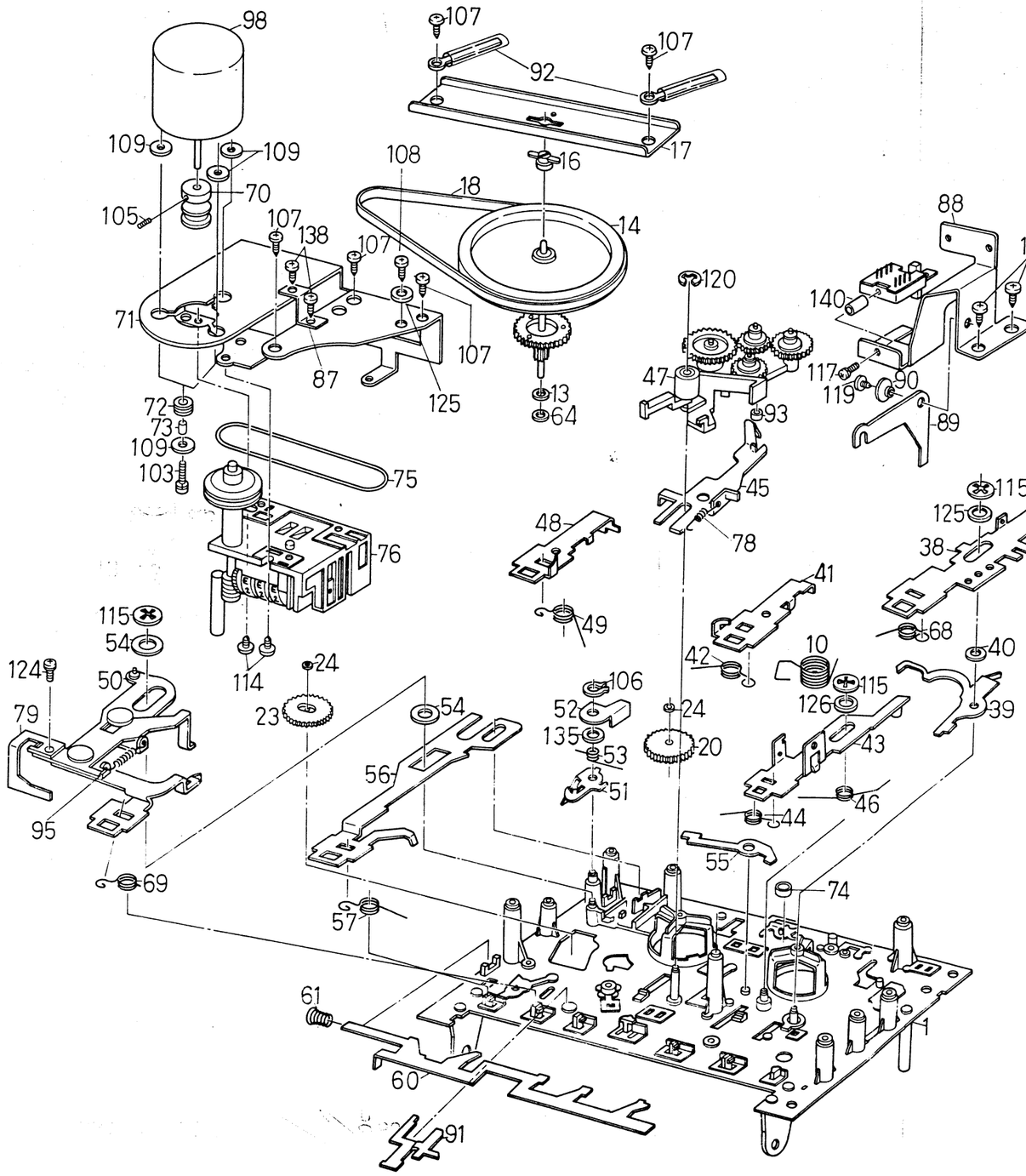


Figure 15.

NOTE: Parts excluded in the Parts List are not available as replacement parts.

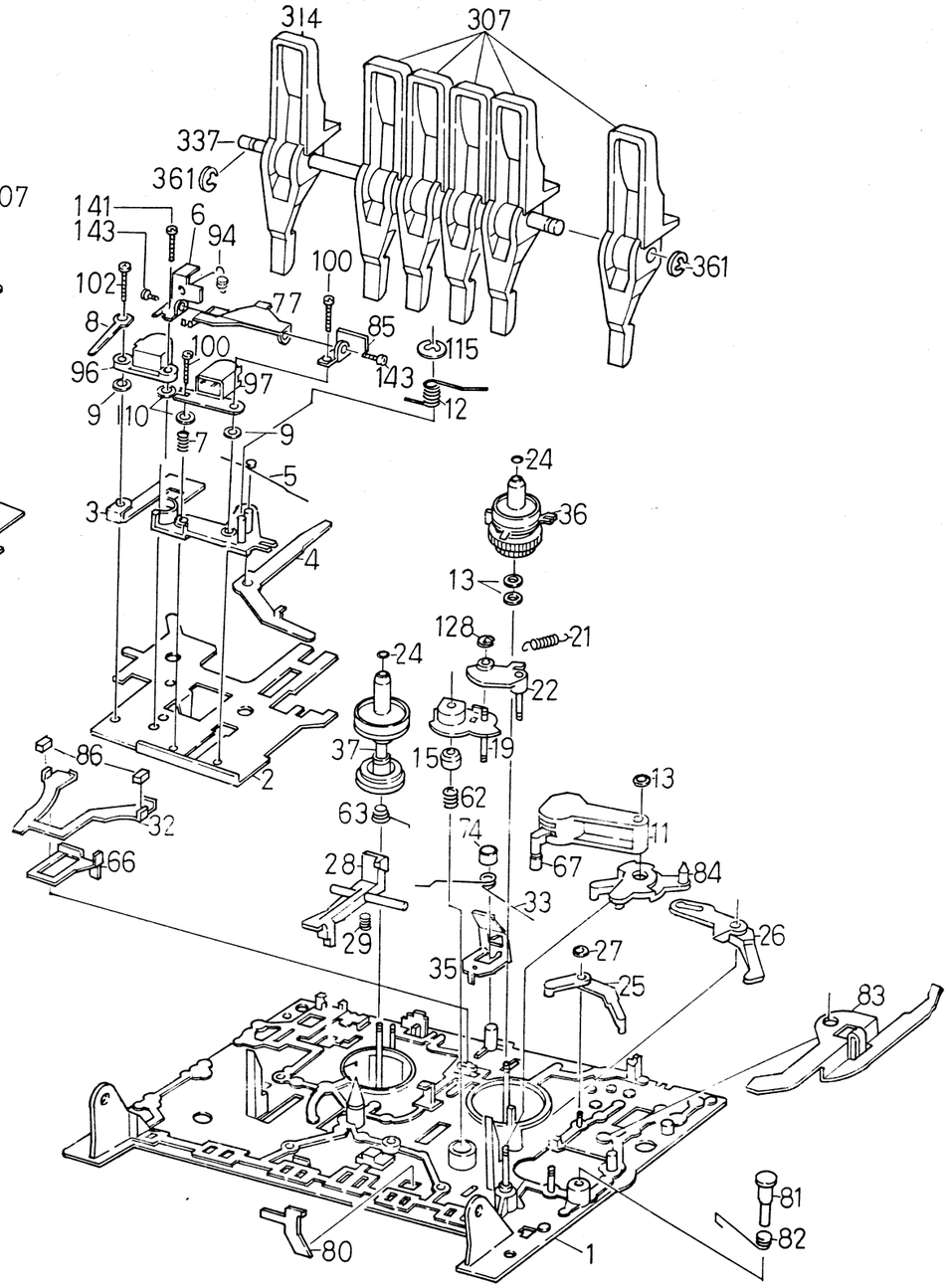


Figure 16.

9. PARTS LIST

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
		TRANSISTORS, ICS AND DIODES
Q101, 201		Transistor, 2SC732-BL
Q102, 202		Transistor, 2SC1815-GR
Q103, 203		Transistor, 2SC1815-GR
Q104, 204		Transistor, 2SC732-BL
Q105, 205		Transistor, 2SC732-BL
Q106, 206		Transistor, 2SC1815-GR
Q301	22114621	Transistor, 2SC1847-R
Q302		Transistor, 2SD880-Y
IC101, 201	22114685	IC, LM1011N
D101, 201, 102, 202		Diode, 1N60
D301, 307		Diode (LED), TLR124
⚠ D302, 303, ⚠ 304, 305	22115183	Diode, SR1K-2 (or S5277B)
D306	22115423	Diode, UZ13B (or 05Z13L)
		ELECTRICAL PARTS
⚠ PT	22223702	Transformer, Power (TE)
⚠	22223703	Transformer, Power (TU)
⚠	22223704	Transformer, Power (AY)
L101, 201	22232231	Coil, Trap (15mH)
L102, 202	22232191	Coil, Peaking (4.7mH)
L301	22235163	Coil, Oscillator
U101, 201	22153115	Filter, MPX
LM101, 201	22104507	Meter, Level
J101, 201	22163767	Jack, Microphone (With S6, S7)
J301	22163768	Jack, Headphone
J302	22163773	DIN Jack, 5P (With S10)
S1	22195436	Slide Switch, Record/Playback
S2, 3, 4	22195437	Push Switch, Tape Selector/ Dolby
S5	22195438	Slide Switch, Muting
⚠ S8	22195451	Push Switch, Power
S9	22195450	Leaf Switch, Motor
⚠ F301	22144423	Fuse, 400mA/250V (TE)
⚠	22144424	Fuse, 400mA/250V (TU, AY)
	22170412	Cord, Patch (RCA)
⚠	22176286	Cord, Power (TE)
⚠	22176536	Cord, Power (TU)
⚠	22176489	Cord, Power (AY)
		CAPACITORS J = ±5%, K = ±10%
C101, 201	22446479	Electrolytic, 4.7mfd, 25V

Symbol No.	Part No.	Description
C102, 202	22445100	Electrolytic, 10mfd, 16V
C104, 204	22446229	Electrolytic, 2.2mfd, 25V
C105, 205	22371102	Mylar, 1000pF, 50V, J
C106, 206	22445100	Electrolytic, 10mfd, 16V
C107, 207	22371102	Mylar, 1000pF, 50V, J
C108, 208	22445100	Electrolytic, 10mfd, 16V
C109, 209	22371562	Mylar, 5600pF, 50V, J
C110, 210	22371273	Mylar, 0.027mfd, 50V, J
C111, 211	22371472	Mylar, 4700pF, 50V, J
C112, 212	22445100	Electrolytic, 10mfd, 16V
C113, 213	22445100	Electrolytic, 10mfd, 16V
C114, 214	22371473	Mylar, 0.047mfd, 50V, J
C115, 215	22445100	Electrolytic, 10mfd, 16V
C116, 216	22371104	Mylar, 0.1mfd, 50V, J
C117, 217	22440208	Electrolytic, 0.33mfd, 50V
C118, 218	22445221	Electrolytic, 220mfd, 16V
C120, 220	22448109	Electrolytic, 1mfd, 50V
C121, 221	22445470	Electrolytic, 47mfd, 10V
C122, 222	22446479	Electrolytic, 4.7mfd, 25V
C123, 223	22371821	Mylar, 820pF, 50V, J
C124, 224	22446339	Electrolytic, 3.3mfd, 25V
C125, 225	22362470	Ceramic, 47pF, 50V, K
C126, 226	22341471	Ceramic, 470pF, 50V, K
C127, 227	22445100	Electrolytic, 10mfd, 16V
C128, 228	22445470	Electrolytic, 47mfd, 10V
C129, 229	22371153	Mylar, 0.015mfd, 50V, J
C130, 230	22371153	Mylar, 0.015mfd, 50V, J
C131, 231	22381221	Polystyrene, 220pF, 50V, J
C132, 232	22371102	Mylar, 0.001mfd, 50V, J
C133, 233	22341471	Ceramic, 470pF, 50V, K
C134, 234	22371183	Mylar, 0.018mfd, 50V, J
C137, 237	22445100	Electrolytic, 10mfd, 16V
C138, 238	22445100	Electrolytic, 10mfd, 16V
C139, 239	22440184	Electrolytic, 0.22mfd, 50V
C140, 240	22445100	Electrolytic, 10mfd, 16V
C141, 241	22448109	Electrolytic, 1mfd, 50V
C142, 242	22381221	Polystyrene, 220pF, 50V, J
C301	22380084	Polystyrene, 1500pF, 125V, J
C302	22371183	Mylar, 0.018mfd, 50V, J
C303	22371223	Mylar, 0.022mfd, 50V, J
C304	22371223	Mylar, 0.022mfd, 50V, J
C306	22446102	Electrolytic, 1000mfd, 25V
C307	22445471	Electrolytic, 470mfd, 16V
C308	22445102	Electrolytic, 1000mfd, 16V
C309	22445330	Electrolytic, 33mfd, 16V
C310	22445101	Electrolytic, 100mfd, 16V
C311	22445220	Electrolytic, 22mfd, 16V
C312	22445220	Electrolytic, 22mfd, 16V

8. CABINET PARTS LOCATIONS

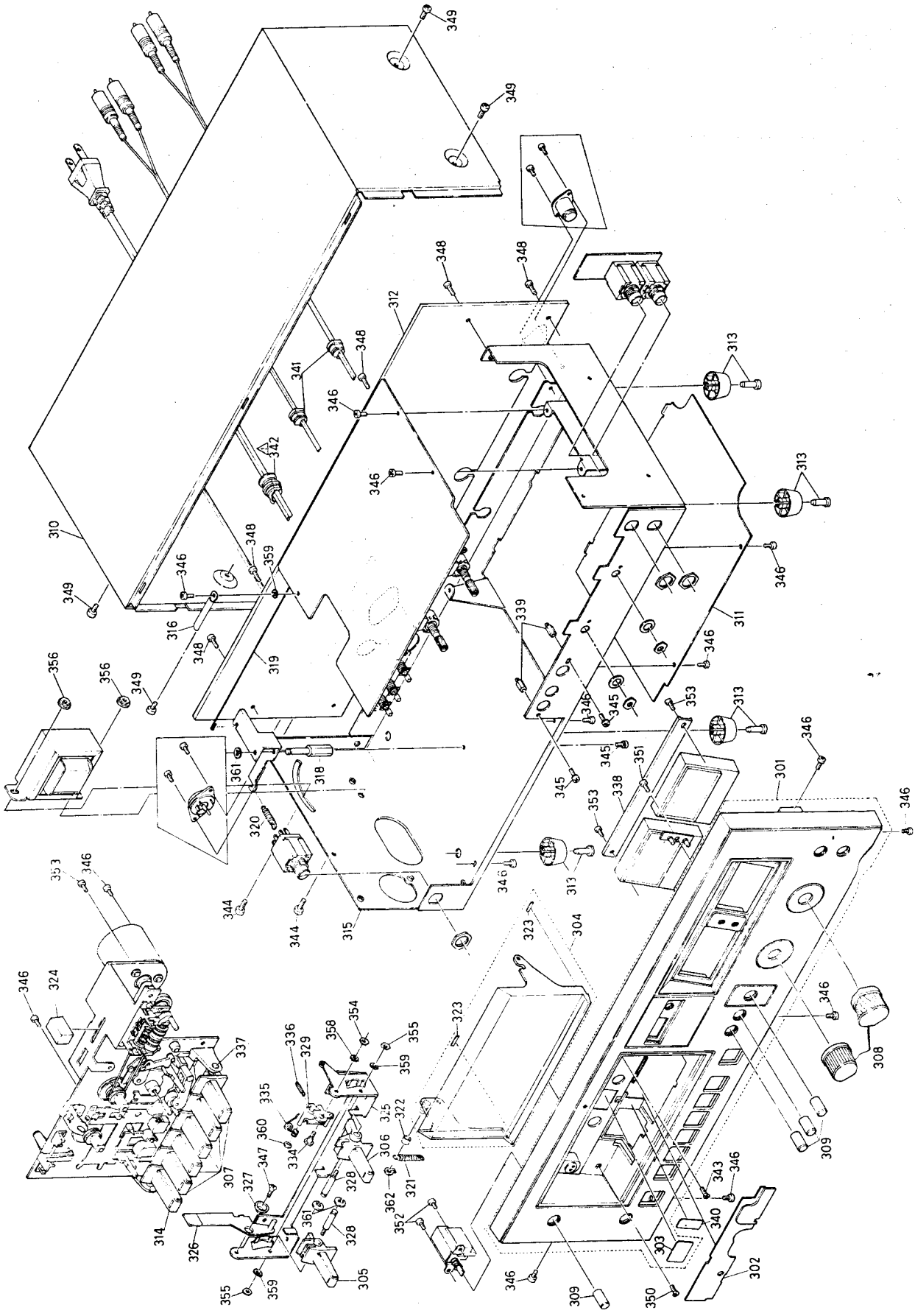


Figure 17.

NOTE: Parts excluded in the Parts List are not available as replacement parts.

Symbol No.	Part No.	Description
		RESISTORS
		All resistors are ¼W, ±5%, carbon film unless otherwise noted. K = ±10%
R101, 201	22555104	100K ohm
R102, 202	22555823	82K ohm
R103, 203	22555394	390K ohm
R104, 204	22555470	47 ohm
R105, 205	22555223	22K ohm
R107, 207	22555332	3.3K ohm
R108, 208	22555181	180 ohm
R109, 209	22555473	47K ohm
R110, 210	22555564	560K ohm
R111, 211	22555274	270K ohm
R112, 212	22555274	270K ohm
R115, 215	22555823	82K ohm
R116, 216	22555394	390K ohm
R117, 217	22555182	1.8K ohm
R118, 218	22555562	5.6K ohm
R119, 219	22555271	270 ohm
R120, 220	22555271	270 ohm
R121, 221	22555100	10 ohm
R122, 222	22555121	120 ohm
R123, 223	22555683	68K ohm
R124, 224	22555823	82K ohm
R125, 225	22555681	680 ohm
R126, 226	22555562	5.6K ohm
R128, 228	22555224	220K ohm
R129, 229	22555822	8.2K ohm
R130, 230	22555392	3.9K ohm
R131, 231	22555472	4.7K ohm
R132, 232	22555153	15K ohm
R133, 233	22555271	270 ohm
R135, 235	22555332	3.3K ohm
R136, 236	22555102	1K ohm
R137, 237	22555682	6.8K ohm
R138, 238	22555123	12K ohm
R139, 239	22555823	82K ohm
R140, 240	22555682	6.8K ohm
R141, 241	22555222	2.2K ohm
R142, 242	22555102	1K ohm
R143, 243	22555123	12K ohm
R302	22555273	27K ohm
R303	22563151	150 ohm, ½W, K, Carbon Composition
R304	22563121	150 ohm, ½W, K, Carbon Composition
R306	22555222	2.2K ohm
⚠ R307	22500172	8.2 ohm, ¼W, J, Fusible
⚠ R308	22570035	470 ohm, 1W, J, Metal Oxide Film
R309	22555101	100 ohm
R310	22555222	2.2K ohm

Symbol No.	Part No.	Description
R311	22555272	2.7K ohm
R312	22555152	1.5K ohm
R313, 314	22563689	6.8 ohm, ½W, K, Carbon Composition
R315, 316	22563479	4.7 ohm, ½W, K, Carbon Composition
VR101, 201	22650455	Variable Resistor, 50K ohm (A)
VR102, 202, 103, 203	22658052	Semi-fixed Resistor, 20K ohm
VR104, 204	22658129	Semi-fixed Resistor, 10K ohm
VR105, 205	22658449	Semi-fixed Resistor, 200K ohm
		MECHANICAL PARTS
3	25733508	Plate, Heads
4	25782353	Lever, Release
5	25773450	Spring, Release Lever
7	25772400	Spring, Record/Playback Head
9	25764584	Washer, Head
10	25773451	Spring, Head Chassis
11	25717435	Pressure Roller Ass'y
12	25773452	Spring, Pressure Roller
13	25764585	Washer, 3ø
14	25717436	Flywheel
15	25725410	Metal, Flywheel
16	25725411	Holder, Flywheel
18	25755430	Belt, Flywheel
19	25782360	Arm, Play Pulley
20	25756221	Pulley, Play
21	25776133	Spring, Play Pulley
22	25782361	Arm, Cam Gear
23	25756222	Gear, Cam
24	25764586	Washer, 2ø
25	25782354	Arm, Auto-stop
26	25782362	Arm, Kick
27	25764587	Washer, 1.5ø
28	25782355	Arm, Record Prevention, Error
29	25772552	Spring
33	25773453	Spring, Brake Arm
36	25712375	Reel Plate Ass'y, Take-up
37	25712376	Reel Plate Ass'y, Supply
40	25764588	Washer
42	25773454	Spring, Rewind Arm
44	25773455	Spring, Play Lever
46	25773456	Spring, Switch Drive Plate
47	25713521	Pulley Ass'y, Middle
49	25773457	Spring, Fast-forward Arm
53	25773458	Spring, Pause Lever
54	25764589	Washer

Symbol No.	Part No.	Description
57	25773459	Spring, Stop Lever
61	25772553	Spring, Slide Lock Plate
62	25772554	Spring, Arm
63	25772555	Spring, Back Tension
64	25764590	Washer, Thrust
65	25756223	Gear, Flywheel
67	25733509	Pipe, 3ø
68	25773460	Spring, Record Lever
69	25773461	Spring, Pause Lever
70	25758038	Pulley, Motor
72	25761420	Cushion, Motor
73	25733510	Cushion, Pipe
75	25755431	Belt, Tape Counter
76	25873213	Tape Counter
78	25776134	Spring, Middle Pulley
82	25773462	Spring, Kick Arm
83	25748438	Lever, Timer
84	25748439	Lever, Timer
86	25761421	Rubber, Brake
94	25776135	Spring
95	25776136	Spring, Release Lever
96	22218217	Head, Erase
97	22217344	Head, Record/Playback
98	22125768	Motor, DC
100	22701398	Screw (PAN), 2ø x 10mm
102	22707487	Screw (PAN), 2ø x 12mm
103	22707151	Screw (BID), 2.6ø x 5mm
105	22701431	Screw (ITB), 2.6ø x 6mm
106	22703282	Ring, 4ø
107	22701326	Screw (BID), 3ø x 8mm, Tapping
108	22707163	Screw (PAN), 3ø x 10mm
109	22703269	Washer, 2.8 x 8 x 0.5
110	25764591	Washer, 2.2 x 6 x 0.3
114	22707473	Screw (BID), 2.6ø x 6mm
115	22703283	Ring, CS
117	22701491	Screw (PAN), 2.6ø x 10mm
119	22701325	Screw (BID), 3ø x 8mm
120	22703119	E Ring, 2.5ø
124	22707151	Screw (BID), 2.6ø x 5mm
126	22703285	Washer, 4 x 10 x 0.8
128	22703117	E Ring, 1.5ø
135	22703286	Washer, 4 x 8 x 0.3
138	22701321	Screw (BID), 3ø x 6mm
140	25753346	Spacer
141	22707488	Screw (PAN), 2ø x 14mm
143	22707265	Screw (BID), 2ø x 4mm
	CABINET PARTS	
301	25817704	Panel Ass'y, Front
302	25838223	Cover, Chassis
303	25828338	Reflector

Symbol No.	Part No.	Description
304	25832381	Door
305	25782356	Button, Open
306	25782357	Button, Timer
307	25782358	Button, Operation
308	25837313	Knob, Record Level
309	25782359	Button, Push
310	25838224	Cover, Top
312	25838236	Plate, Back (TE)
312	25838237	Plate, Back (TU)
312	25838238	Plate, Back (AY)
313	22828048	Leg, Rubber
314	25837314	Button, Record
320	25776137	Spring, Record
321	25776138	Spring, Door
322	25761425	Cushion, Door
324	25761422	Cushion, Door
326	25816589	Lever Ass'y, Door
335	25773463	Spring
336	25776139	Spring
341	25845528	Stopper, Cord
343	22701397	Screw (FLT), 2.6ø x 6mm
344	22707402	Screw (BID), 4ø x 10mm
345	22701321	Screw (BID), 3ø x 6mm
346	22701321	Screw (BID), 3ø x 6mm
347	22701348	Screw (FLT), 3ø x 8mm
348	22701325	Screw (BID), 3ø x 8mm
349	22707185	Screw (BID), 4ø x 8mm
350	22707489	Screw (FLT), 2.6ø x 6mm, Tapping
351	22707473	Screw (BID), 2.6ø x 6mm
352	22707323	Screw (BID), 2.6ø x 8mm
353	22701325	Screw (BID), 3ø x 8mm
354	25720130	Nut, 2.6ø
355	22702108	Nut, 3ø
356	20796041	Nut, 3ø
360	22703119	E Ring, 2.5ø
361	22703280	E Ring, 4ø
362	22703284	Ring, 3ø
	ACCESSORIES	
	22902382	Owner's Manual (E)
	22902383	Owner's Manual (F)(TE)
	22902384	Owner's Manual (G)(TE)
	22990374	Cleaner, Head